Electric Cooking in Kampala

Technology Review

Eric Behling, Ahana Mukherjee,

Rodney A Perez, Sarah Yasuda

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Background

Objective & Scope

Examine trends in power quality through studying power consumption, voltage and frequency stability on an events basis when electric appliances are in use in informal community settlements in Kampala, Uganda.

Method

1) Disaggregate temporal electric sensor meter data for analysis and processing
2) Comparative study of survey responses in relation to energy consumption data

Software Application

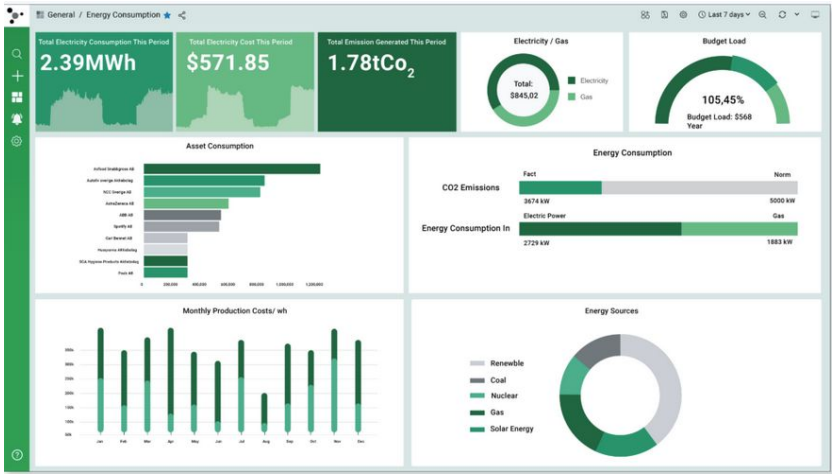
Output

Create an interactive dashboard for data visualization and results for the following stakeholders:

- Research team
- Utility
- Policymakers

Blue Sky

Dashboard contains visualization that updates in real-time as remote sensors capture voltage, current, frequency, and power measurements



Technology Considerations & Selection

NumPy
Array and matrix manipulation

Pandas
Dataframe creation; merging and processing data sets

Matplotlib
Preliminary data visualization

Seaborn
Detailed statistical data visualization

Dash + Plotly.js
Dashboard creation and integration

Seaborn Package

Appeal	Drawbacks
Builds on top of Matplotlib; integrates with Pandas	Memory intensive for complex datasets
Ability to switch between plot styles quickly	Compatibility issues (i.e. with Dash, etc.)
Automatically perform statistical calculations	Newer development, possibly prone to bugs
Simple one functional call for graphics creation	Less flexibility compared to Matplotlib

Dash Package

Appeal	Drawbacks
Interactive capabilities	Learning curve (prior HTML experience)
Aesthetic appeal	Formatting limitations
Integration with Jupyter Notebooks	Dependent on server callbacks (less efficient than using Javascript code)
Eliminates the need for Javascript, HTML, CSS	Free features only allow hosting dashboard locally